



**US Army Corps
of Engineers**
Louisville District

**Rough River
Dam Safety Assurance Project
Breckenridge and Grayson Counties, Kentucky
Project Summary – August 2006**

The Corps of Engineers recently began dam repairs necessary to correct structural problems discovered during the normal inspection and review process. While no emergency conditions have developed, the repairs are necessary to maintain the long-term integrity and safety of the dam. The Corps' emphasis continues to be public safety and to minimize public inconvenience.

Since the original announcement, there have been numerous misunderstandings about the project, especially concerning the lake pool elevations during the construction period between Summer 2006 and Spring 2008. There is no planned change in summer lake elevations between Memorial Day and Labor Day at any time before or after this project.

A brief description of each of the dam safety problems, planned repairs, and impacts to lake users is presented on the following pages.

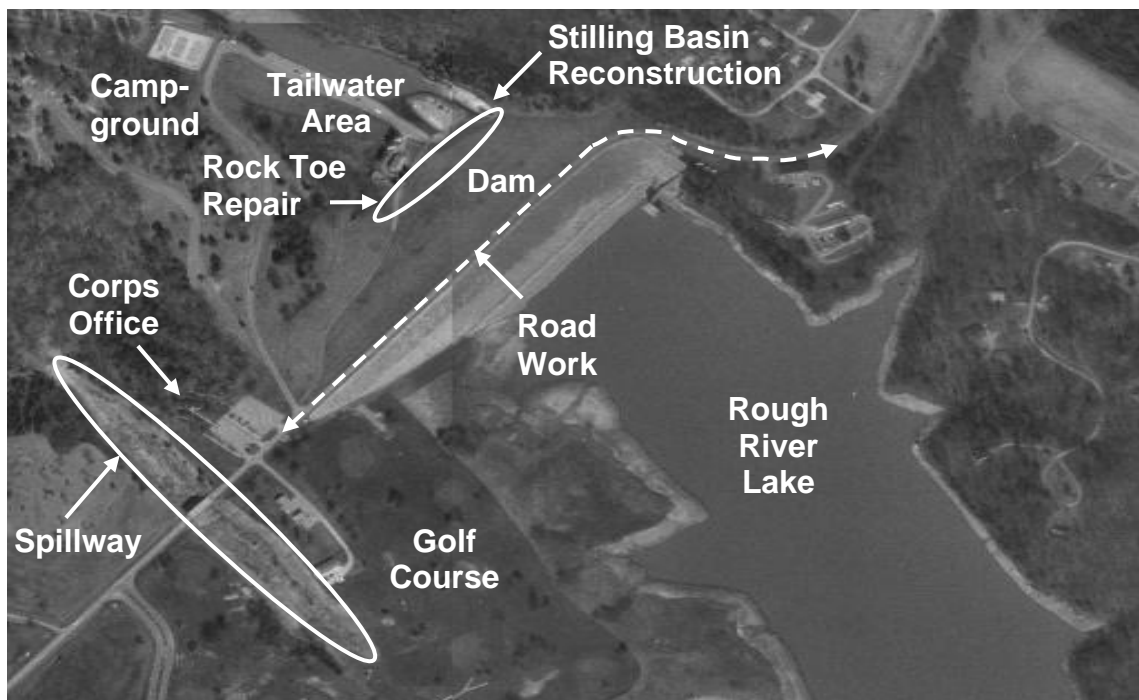


Figure 1. Project Overview

For Additional Information:

Rough River Lake: (270) 257-2061

Public Affairs Office: (502) 315-6767

Spillway Remediation: Road Work to Raise the Top of the Dam

Issue: The spillway is the rock cut adjacent to the Corps' project office. Floodwaters retained by the dam cannot flow through the existing spillway fast enough to keep the dam from overtopping. Without modifications, the dam could fail by overtopping during the design flood, a yet to be experienced extreme event. An additional 5 feet of dam height or 85 feet of spillway width is required to provide the necessary flow capacity.

Repair: The top of the dam will be raised by 5 feet. This will be accomplished by a combination of raising the existing road by approximately 1.5 feet and placing a 3.5-foot-tall, permanent, highway "Jersey" barrier wall along the upstream side of the road.

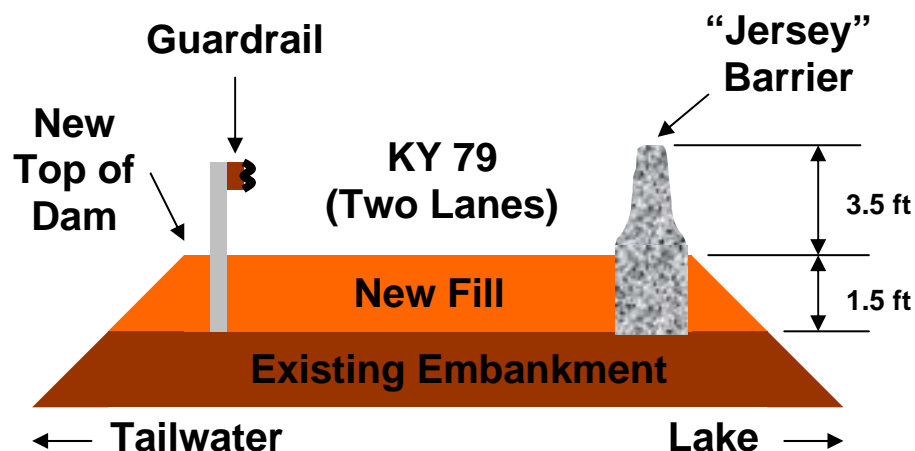


Figure 2. New Top of Dam

Impact: Construction to raise the top of the dam is scheduled from Summer 2006 to Winter 2006. During this time, access across the dam (State Road 79) will be limited to one lane traffic and wide load restrictions. Automated traffic control signals will be positioned at each end of the dam to regulate the one-way traffic flow.

Rock Toe Repair

Issue: During the original dam construction, rock was blasted from the spillway and placed at the bottom of the dam on the downstream slope as fill. The remainder of the dam was made of clay soil from surrounding areas that was placed directly behind the rock toe. The rock fill did not have an ideal gradation and no filter or choker material was placed between the rock and soil fills. Water soaking into the downstream slope of the dam is causing soil particles to wash into the rock fill. A sinkhole formed in September 2002, and numerous depressions have developed on the downstream slope. Without repair, further soil loss and softening of the embankment at the downstream toe will eventually produce conditions which may promote instability of the dam.

Repair: The earth embankment behind the rock toe will be excavated to expose the backside of the rock fill. Granular filter material will be placed against the rock fill to prevent soil particles from washing into the porous rock fill. After placing the filter, the embankment will be restored to its original slope. In the area of the former river channel, the depth of the rock fill is too deep to safely excavate. A cutoff wall will be installed to the bottom of the rock toe and filled with cement-bentonite slurry to isolate and prevent further embankment softening upstream. Soil modification will be performed in conjunction with the shallow excavation to make the embankment slope more impervious to surface water infiltration behind the rock toe.

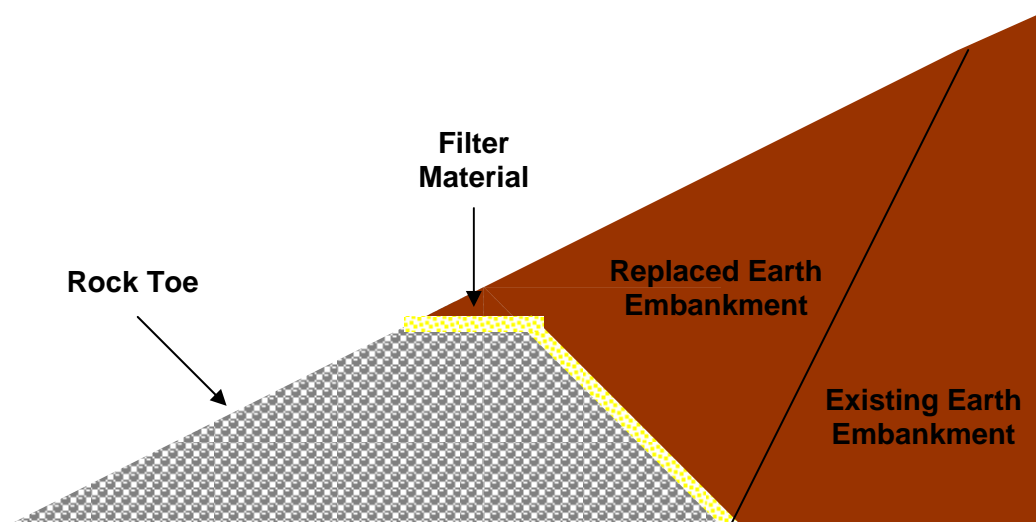


Figure 3. Shallow Excavation, Filter Construction, and Replacement

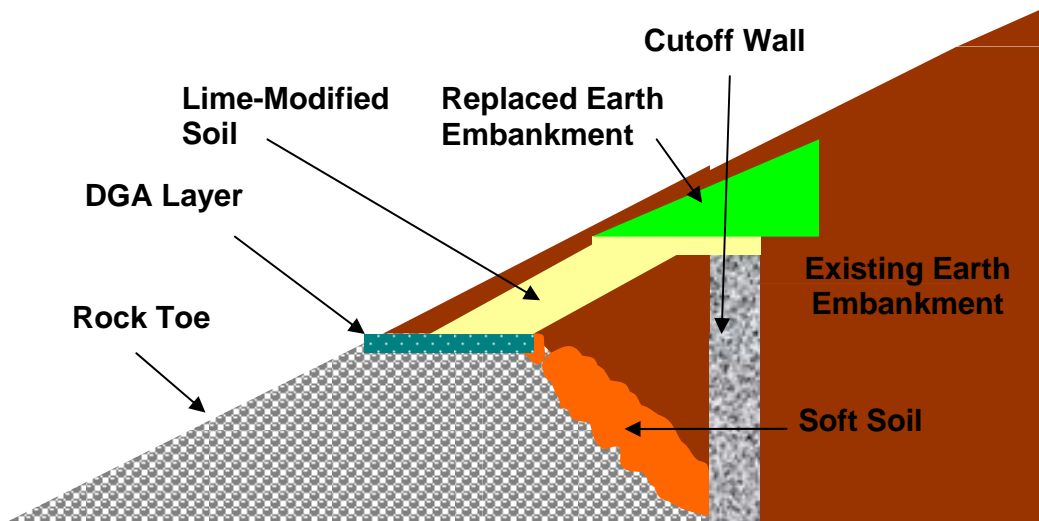


Figure 4. Cutoff Wall in Area of Former River Channel

Impact: Construction to repair the rock toe is scheduled from Summer 2006 to Winter 2006, along with raising the dam. During this time, the public will not have access to the outlet bucket, and access to the tailwater fishing area will be closed. However, the state park tailwater campground will remain open and will not be affected.

Stilling Basin (Outlet Bucket) Modification

Issue: The existing stilling basin does not adequately break up the force of the water discharging from the dam's conduit. The turbulence in the water has resulted in expensive periodic repairs to the downstream concrete apron. Without any modifications, the project's efficiency will be reduced, and operation of the outlet works during peak discharges could be threatened. Similarly, without repair, failure of the apron is possible which could undermine the outlet bucket and threaten the stability of the dam.

Repair: The stilling basin will be redesigned to control the force of water from the conduit during peak discharges and to alleviate the need for continual repairs. A model was constructed at the Corps' Waterways Experiment Station in Vicksburg, Mississippi to assist in the design. The model showed that lengthening the basin by about 90 feet and placing a series of concrete baffle blocks in the basin would adequately disrupt high-energy flows from the conduit. Access to the tailwater area to accommodate fishing will also be improved.

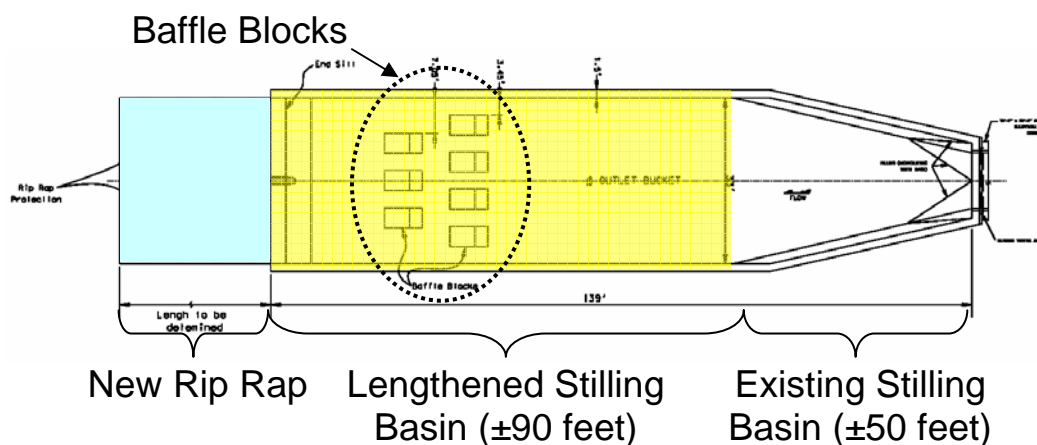


Figure 5. Stilling Basin Modification

Impact: Reconstruction of the stilling basin is scheduled from Fall 2007 to Spring 2008. During this time, the public will not have access to the outlet bucket, and access to the tailwater fishing area will be closed. However, the state park tailwater campground will remain open and will not be affected. Reconstruction of the stilling basin must be performed while the lake is at winter pool to minimize the risk of flood discharges which could wash out the partially completed construction and cause serious damage to the outlet structure or dam. The normal reservoir operation will be modified slightly in Fall 2007 only. An accelerated drawdown from summer pool will begin on or about September 11, 2007 to reach winter pool as early as possible, in order to complete construction before spring filling in 2008. The pool should be returned to summer pool by the traditional target date of April 15, 2008.